

NEW NORTH AMERICAN SCARABAEIDAE, WITH
REMARKS ON KNOWN SPECIES

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TYNGSBORO, MASS.

AEGIALIA***Aegialia convexa*** new species.

Ovate, rather ventricose and strongly convex; black, varying to dark brown, elytral suture narrowly rufescent.

The form is fairly intermediate between that of *conferta* and *crassa*. It agrees with *conferta* in the distinct and entire basal marginal line of the thorax, and the stout foliaceous metatibial spurs, but is nearer *crassa* in size, in its finer less impressed and less evidently punctate elytral striae, and in the stouter more triangular hind tibiae, the width of which at apex is nearly if not quite one-half the length of the posterior edge of the tibia. The head is similarly verrucose but a little less strongly so than in either *conferta* or *crassa*. The pronotal sculpture does not agree with either of these species, the surface being a little uneven, the punctures fine, sparse and distributed equally over the whole area of the disk except toward the side margins, the lateral fovea (as in *crassa*) indistinct or wanting.

Length 4.2 to 4.7 mm.; width 2.25 to 2.75 mm.

Type. Los Angeles Co., California, without more exact locality. Other examples, collected by the writer, were taken on or near the ocean beaches at Santa Monica and Redondo.

Inasmuch as practically all our blackish species of *Aegialia* vary individually in color to some shade of brown, there seems little use or point in dignifying so commonplace a variation with distinctive names. Of *Aegialia conferta* I have taken black, brown and intermediate individuals all at the same place in Southern California. To me varietal names here would be entirely superfluous, but to those who elect to use Mr. Brown's name *nigrella* for black specimens of *conferta* it may be pointed out that these and not the brown examples constitute the typical form of the species, as is unequivocally stated in Horn's original description.

APHODIUS

The last systematic treatment of the genus *Aphodius* within our faunal limits—that of Horn in 1887—recognized 81 species.

Since that time very many new forms have been described, so that the total number at present cannot fall far short of 140, and there are yet more to come. The situation for the student who desires to identify his specimens is already so bad that it cannot be made much worse by the descriptions of six additional species in the following pages. An effort has been made to correlate these with previously known species so that they may be readily incorporated in new tables which it is to be hoped some one may soon prepare or bring together for the whole genus. A few notes on known species are first presented.

Aphodius longitarsis Fall.

The specific name being preoccupied was changed by Reitter to *tenuitarsis* (Wien Ent. Zeit., 1908, p. 36), which reference seems to have been generally overlooked and the species appears in the Leng Supplement under the name *peculiosus*, proposed by Schmidt in 1922. The name substituted by Reitter proves also to have been preoccupied by Fairmaire for a Madagasean species, so that Schmidt's name *peculiosus* prevails for our species.

Aphodius (Didactylia) parvus Horn.

This little species is known to me from three Florida specimens only, two including the type in the Horn collection, and the third bearing name label in Horn's hand in the Le Conte cabinet. There occurs along the New Jersey and Georgia sea coast an extremely similar form which passes as *parvus* in collections but which is not strictly conspecific therewith, and in one important respect is more nearly in accord with *knausi*, of which I at present consider it a local variant. In *knausi* the fimbriation of the lateral edge of the thorax consists of only three or four rather long setae anteriorly, the posterior half being quite destitute of marginal hairs. In *parvus* the marginal setae are shorter, about eight or nine in number and extend almost throughout the length. In *knausi* the pronotum is always clouded with a darker tint and the elytra always show some maculation, of which a small transverse spot across the suture at about the middle is characteristic. In *parvus* the size is a little smaller and the upper surface is immaculate, there being at most only a faint median shade on the pronotum. In the sea shore form alluded to above the markings

vary from fairly distinct to nearly or quite lacking, but the pronotal fimbriation is in every one of the dozen examples studied substantially as in *knausi*, and not at all as in *parvus*. The difference in situation of the sides of the basal margin of the pronotum suggested by Mr. Brown (Can. Ent., 1929, p. 91) for distinguishing *parvus* and *knausi* is not a satisfactory criterion in my experience.

Aphodius inutilis Horn.

A specimen in my collection from Chinchilla, Pa., sent me by Mr. Champlain, was found to run to *inutilis* by Horn's tables. Doubting the accuracy of the reference because of the published locality of *inutilis* (California, Oregon) I sent the specimen to Mr. Liebeck, who compared it with Horn's type and found it to be the same. Mr. Liebeck also discovered a like specimen from Boonton, New Jersey, in his own collection. The species is a rare or little known one and I know of no instance of its recognition from anywhere between these widely separated regions.

Aphodius testaceiventris new species.

Belongs to Horn's Group A, and is closely allied to *denticulatus*.

Body oblong oval, moderately elongate, black, clypeus rufescent, abdomen dull testaceous, legs dark rufous or rufopiceous; surface moderately shining, the elytra somewhat less so because of an evident alutaceous ground sculpture.

Head moderately punctate, more sparsely at middle of front, base smooth; frontal suture distinctly cariniform and feebly trituberculate; clypeus with a short transverse elevation at middle, margin obtusely biangulate each side of the median sinus.

Prothorax two-fifths wider than long, sides broadly arcuate and not very strongly convergent to the front, hind angles obtuse but well defined; surface with somewhat unevenly distributed coarser and finer punctures intermixed.

Elytra slightly wider than the thorax, scarcely widened behind; striae finely punctured, intervals a little convex, each with a fairly regular row of punctures each side. Body beneath with very few fine punctures; middle and hind thighs with a longitudinal row of setigerous punctures in outer half or more.

Length 5.4 to 5.6 mm.; width 2.5 to 2.85 mm.

Hamilton Co., Kansas (F. H. Snow). Three examples received many years ago from Prof. Snow, probably as *denticulatus*.

As stated above this species is nearly related to *denticulatus*. The size is a little smaller than in the latter, the clypeal angulations less prominent, pronotum relatively more coarsely punctate, the hind angles well defined (broadly rounded in *denticulatus*). The margins of the body are ciliate, but less densely so than in *denticulatus*, and the hind tibiae are not closely fimbriate within, there being merely a few widely spaced short hairs along the inner margin.

I am uncertain as to the sexes. One of the three examples is more robust than the other two, the protibial spur shorter, the spurs of the middle tibiae not very unequal, while in the other two examples the longer spur is nearly twice the length of the shorter; these may be assumed to be males, and one of them is taken as the type.

Aphodius incommunis new species.

Oblong, moderately elongate, nearly parallel sided, integuments strongly shining. Head rufous, front and clypeus densely rugose punctate, occiput closely punctate, frontal suture feebly trituberculate, clypeus with median transverse carina, margin sharply bidentate.

Prothorax transversely subquadrate, black, apical margin narrowly, lateral margin more broadly rufous; one-third wider than long, sides subparallel, a little convergent in front, hind angles obtusely rounded as viewed from the side; surface with rather sparse larger and smaller punctures intermixed; side margins closely fimbriate.

Elytra at base subequal in width to the thorax, just perceptibly widening posteriorly, two-fifths longer than wide; color reddish yellow varied with darker brown, the latter forming on each elytron a somewhat indefinite antero-median discal area which encloses a pale streak on the fifth interval and sends a spur forward to the base of this same interval; there is also a vague subapical fascia behind a paler fascia at the summit of the declivity. Striae moderately finely punctate, intervals almost impunctate, polished.

Body beneath reddish brown, sparsely punctate, with yellow hairs. Protibiae crenulate above, terminal spur slender, curved and gradually pointed, not quite attaining the apex of the second tarsal joint; spurs of middle tibiae slender, the lower spur but little more than half the length of the upper; middle and hind thighs smooth with a few scattered very fine punctures; basal joint of hind tarsus as long as the three following.

Length 4.8 mm.; width 2.2 mm.

The unique type (sex unknown) was taken at Vernon, British Columbia, V-2-24, by Mr. Hopping, from whom I received it.

The characters of the above species attach it to Horn's Group B, where it must be associated with the species at the beginning of the table. It differs from all of these by the color and distinctly bidentate clypeus.

Aphodius fortunus new species.

Elongate oblong, rufocastaneous throughout, integuments polished.

Head densely punctate, frontal suture not distinctly tuberculate; clypeus with an obtuse median transverse tumidity; margin bidentate, the teeth short, distinctly reflexed and with a small exteriorly adjacent sinus; genæ prominent, subrectangular but with the angle rounded.

Prothorax three-fifths wider than long, sides nearly straight and slightly convergent toward the front; hind angles obtuse, fairly well defined; punctuation intermixed, the coarser punctures sparse on the disk but more numerous laterally; median line narrowly smooth posteriorly, a shallow foveiform impression at sides anteriorly and another more oblique near the hind angles; margin not distinctly fimbriate:

Elytra at base as wide as the thorax, sides parallel and very broadly arcuate; striæ rather finely closely punctate; intervals nearly flat with sparse minute punctures.

Body beneath with sparse punctures and pale hairs. Protibiæ scarcely erculate above, terminal spur long and slender; upper spur of middle tibiæ about twice as long as the lower; middle and hind femora with a few very fine punctures and a row of coarser setigerous punctures externally; basal joint of hind tarsus a little shorter than the next three.

Length 5 mm.; width 2.25 mm.

Arizona (White Mts., Gila Co.). A single specimen, probably a male, received from Mr. Poling. It bears date Aug. 15-30, 1925.

This species runs to Horn's Group B, and in clypeal formation is most nearly related to the preceding species. The only other entirely red species of this group is *arizonensis* Schaef., which has the clypeal margin sinuate with broadly rounded angles.

The following table presents the diagnostic characters of the small group containing this and the preceding species.

Clypeus with a prominent tooth on either side of the emargination.

Color reddish, pronotum blackish except front and side margins, elytra variegated with darker brown. (British Columbia).....*incommunis*.

Color uniformly dark red throughout, clypeal tooth shorter, thorax more strongly transverse. (Arizona).....*fortunus*.

Clypeus usually more or less distinctly biangulate, the angles however becoming more prominent or subdentiform in some individuals.

Small species (3.8 to 5 mm.), color entirely black.

Form short, robust, broader behind as in certain *Aegialia*. (Florida).

crassulus.

Form less stout, not at all widened posteriorly.

Elytra shorter and more convex in profile; prothorax at sides more densely punctate; genæ prominent (Tex. and La.).....*abusus*.

Elytra longer and less convex, prothorax more sparsely punctate laterally, genæ more broadly rounded and less prominent. (New Mexico; Arizona)*crassuloides*.

Larger species (6.5 to 7 mm.); black, elytra clear red. (Colorado).

bidentatus Schmidt (*bidens* || Lec.)

In the Supplement to the Leng Check List *abusus* and *crassuloides* are interrogatively referred to *crassulus* Horn on the authority of A. Schmidt.

I do not know upon what basis of material this author finds his surmise, but I feel quite sure he is incorrect and doubt very much if he has ever seen an example of the true *crassulus*, which is thus far a very scarce species and known only from Florida.

***Aphodius claudus* new species.**

Closely similar to *concausus* Say and possibly only a small race of that species. Four differential characters are fairly distinct throughout my series, and while no single one of them carries much weight, the four in combination appear to warrant a tentative separation.

In the present species the size is materially smaller, the length varying from 5.5 to 7 mm. Horn gives for *concausus* 8 to 8.5 mm., which covers the material in my own series. The hind angles of the prothorax are more rounded than in *concausus*, in which they are somewhat defined though obtuse with rounded vertices. The very fine punctures of the pronotum and elytral intervals are noticeably less minute than in *concausus*, and the elytral intervals show under considerable amplification an extremely fine alutaceous sculpture not discoverable on the highly polished integuments of *concausus*. In color, form of body, clypeal outline, type of punctuation, body beneath and legs, including tibial spurs, the present species is closely in accord with *concausus*.

Described from a series of six specimens (2 ♂, 4 ♀) collected by Mr. O. C. Poling at Alpine, Texas. The type is a male and bears date May 1-15, 1926.

In *concausus* the clypeal margin is said to be rounded each side of the emargination. This is the typical form, but in some individuals there is an evident though very obtuse angulation limiting the median sinus. This feeble angulation is similarly

perceptible in *claudus*, and the table should be modified to include this variation.

Aphodius crenicollis new species.

Oblong, moderately convex, entirely dark red brown, shining.

Head rather densely punctate, rugulose anteriorly, frontal suture very fine, obsolete at middle, its lateral tubercles faintly visible. Clypeal margin broadly truncato-emarginate at middle with a small prominent triangular denticle each side; genæ prominent, subrectangular; margins fimbriate.

Prothorax one-half wider than long, trapezoidal, the sides feebly convergent and almost straight throughout; base strongly arcuate, marginal line entire, hind angles obtuse, rounded; side margins fimbriate and crenulate; disk loosely not coarsely punctate at middle, becoming more coarsely and quite densely so laterally; minute interstitial punctures lacking, sides with rather large anterior and posterior concavities which cause the margin to appear subexplanate, especially at the hind angles.

Elytra parallel, two and two-fifths times as long as the thorax, striae fine and very finely punctate, intervals nearly flat, smooth and polished, punctures numerous and distinctly coarser than those of the striae.

Body beneath sparsely finely punctate; protibiae strongly tridentate, not perceptibly crenulate above; basal joint of hind tarsus barely as long as the next two.

Length 5.7 mm.; width 2.6 mm.

Modoc Co., California. A single example collected and sent me by Mr. Nunenmacher. It bears date V-15-13.

This species is a member of Horn's Group Ia and is most nearly allied to *militaris*. As in *militaris* the punctures of the elytral intervals are coarser than those of the striae, but they are evidently less so than in the latter species. The hind angles of the thorax are less broadly rounded than in *militaris* but less well defined than in *aemulus*. Neither of these two species has the lateral thoracic margin crenulate.

Aphodius ruficlarus new species.

Oblong oval, strangely convex, clear pale red throughout, integuments polished.

Head very finely evenly sparsely punctate; frontal suture very fine, lateral transverse tubercles barely detectable, median one lacking; clypeus arcuately emarginate, the emargination limited each side by a small sharply defined triangular denticle which forms the termination of a short but distinct longitudinal carina; genæ broadly obtusely rounded, feebly prominent.

Prothorax moderately transverse, sides very broadly arcuate and slightly convergent from the rounded base angles; basal marginal line interrupted for a short distance each side, lateral margins sparsely fimbriate; disk finely

sparsely punctate, the punctures gradually closer and coarser laterally, the interstices throughout with more minute scattered punctures.

Elytra finely but rather deeply striate, strial punctures fine; inter-spaces a little convex, sparsely minutely punctulate.

Body beneath sparsely finely punctate and thinly pubescent; protibiae strongly acutely tridentate, above finely crenulate; basal joint of hind tarsus a little shorter than the next three.

Length 6.4 mm.; width 3 mm.

Phoenix, Arizona.

Described from a single example, sex unknown but probably a female, all the tibial spurs being slender and acute. The larger size, very finely punctate head, and undefined angles of the thorax will serve definitely to distinguish this species from *amulus* Horn, to which it is most nearly allied. In all specimens of *amulus* seen by me the basal marginal line of the thorax is entire.

PSAMMOBIUS

Psammobius armaticeps new species.

Oblong, slightly widened posteriorly. Type: dark brown above, thorax and occiput piceous, beneath reddish brown, integuments shining.

Head verrucose, clypeus broadly emarginate, the limiting angles dentiform and somewhat reflexed, genæ moderately prominent.

Prothorax three-eighths wider than long, scarcely narrowed in front, sides evenly arcuate, margins feebly crenulate and sparsely fimbriate; disk coarsely numerous unevenly punctate, without trace of either transverse or longitudinal grooves, sides rather widely smooth, a transverse impression within the front angles; base with entire marginal line, hind angles very obtuse, scarcely defined, front angles rounded.

Elytra one-third longer than wide, as wide at base as the thorax, very slightly broader behind; striæ strongly impressed, punctate, intervals a little convex, almost perfectly smooth.

Mesosternum finely carinate between the coxæ; ventral segments each with a single transverse row of coarse punctures interrupted at middle. Hind femora very stout, with a row of closely placed rather coarse setiferous punctures parallel with the hind margin; hind tibiæ stout, subtriangular, without trace of transverse ridge, the terminal spurs a little expanded before the apex, the longer subequal in length to the first two tarsal joints, which are typically triangular.

Length 3.35 to 3.7 mm.; width 1.65 to 1.8 mm.

The type and one other specimen were taken by the writer at Pensacola, Florida, July 8, 1893. A third example, from Tybee Island, Georgia, is entirely ferruginous in color and has the

pronotal punctures grouped in a transverse arcuate band behind the middle, leaving the anterior part of the disk nearly smooth except for some irregular wrinkles: in all other respects it agrees well with the Pensacola types.

Because of its bidentate clypeus this species was for a time assumed by me to be the *bidens* of Horn. A true exponent of the latter taken more recently at Dunedin, Florida, shows the two forms to be quite distinct. In *bidens* the pronotum is much more sparsely punctate, the hind femora smooth without the row of setigerous punctures, hind tibiae not triangular and with a transverse ridge, the spurs of the hind tibiae slender, not at all foliaceous, the ventral segments irregularly punctate.

***Psammobius blandus* new species.**

Oblong, a little wider behind; flavotestaceous, shining.

Head coarsely verrucose, occiput somewhat vaguely transversely impressed; clypeus rather deeply emarginate, the limiting angles well defined, slightly obtuse.

Prothorax fully one-third wider than long, sides strongly arcuate, front angles well defined and acute as viewed from above; hind angles undefined, the sides broadly rounding into the base; margins not crenulate, except finely so near the front angles. Surface shining throughout, a well marked and entire anterior marginal groove and three discal grooves, all interrupted at middle by a longitudinal sulcus which is abbreviated in front. The transverse grooves are vaguely punctate but the intervening ridges and a broad lateral convexity are quite smooth; basal marginal line fine.

Elytra moderately strongly convex, suboval, slightly more than one-fourth longer than wide, at base scarcely as wide as the thorax but distinctly wider than the latter posteriorly, humeri not dentate. Striae moderately deep, closely and rather strongly punctate; intervals perceptibly convex, sparsely almost invisibly punctulate, the outer ones minutely alutaceous but shining.

Mesosternum not carinate; metasternum smooth; ventral sutures very fine, the segments smooth and apparently impunctate, but a few irregularly dispersed minute punctules are discoverable on close inspection. Middle and hind femora stout, smooth and shining, a row of three or four fine setigerous punctures in outer half. Hind tibiae rather stout, without transverse ridges but with usual rows of tubercles, apex one-half as wide as the length of hind margin; spurs not very stout but perceptibly wider at apical third, apex moderately acute; posterior tarsi lacking.

Length 2.8 mm.; width 1.35 mm.

El Paso, Texas. A single example taken by the writer Nov. 17, 1889.

It is not possible to say whether the pale color is normal or due to immaturity, but there is no other indication of the latter. The very fine ventral sutures and virtually impunctate ventral segments with the few discoverable punctules irregularly dispersed instead of arranged in transversè rows, constitute the peculiar features of this species. In general aspect it most resembles *5-plicatus*.

Psammobius mimeticus new species.

Very closely similar to *interruptus* in size, form, color and sculpture, but the elytral intervals instead of being nearly flat as in that species are all distinctly convex or obtusely cariniform. The pronotum is a little duller with more numerous granuliform elevations than in the few specimens of *interruptus* seen, but this distinction is likely to prove evanescent.

Described from three examples given me many years ago by Chas. Fuchs, and all collected at San José del Cabo, in the Cape region of Lower California.

DIPLLOTAXIS

Diplotaxis mus new species.

Oblong oval, twice as long as wide; brown with faint greenish bronze reflections, sparsely clothed with short appressed squamiform hairs which are more abundant and more scale-like beneath.

Labrum deeply arcuately emarginate; mentum flatly convex, declivous only at its apex and completely devoid of transverse ridge and erect setæ. Head large, three-fourths as wide as the prothorax; clypeal margin moderately reflexed, broadly arcuate throughout; clypeal suture feebly defined, not impressed; front flat, head throughout closely coarsely punctate; eyes separated by about five times their own width.

Prothorax strongly transverse, not quite twice as wide as long, sides broadly arcuate, base but little wider than the apex; surface coarsely closely punctate, more densely so laterally, a small smooth spot at middle of disk; median lateral fovea weak.

Elytra two-fifths longer than wide and three times as long as the thorax, feebly dilated behind; costæ faint; strial and intercostal punctures coarse and close set, the latter confused on all the intercostal spaces.

Upper tooth of protibia slightly nearer the apex than the base of the tibia; unguis at about the apical third of the claw.

Length 5.5 mm.; width 2.7 mm.

Described from a single example, sex unknown, bearing label Cochise Co., Arizona, VI-9-08.

This little species is not at all like any of the previously described pubescent species, differing sharply from them all in

its appressed subsquamiform vestiture. It may best be placed for the present at the end of the pubescent group, following *sparsesetosa*.

Diplotaxis protensa new species.

Elongate oblong, parallel, red brown to black, shining, alutaceous sculpture not perceptible except under high power.

Mentum of the type indicated under caption "12" in my table, the anterior declivity beginning at about the basal third, the summit of the declivity without raised line and without setae, at least at middle. Front and clypeus in some plane, margin of the latter broadly sinuate with rounded angles; postclypeal convexity obsolete or but very feebly indicated, punctuation moderately coarse, dense, a little sparser at middle of vertex.

Prothorax about six-sevenths wider than long, sides broadly arcuate, convergent in front, subparallel basally without sinuation. Surface rather finely not closely punctate, with feeble median and posterior sublateral impressions.

Elytra typically rather more than two-fifths longer than wide and slightly less than three and one-half times as long as the thorax. Discal costae scarcely convex, intercostae all broadly confusedly punctate.

Body beneath moderately punctate at sides, very finely and sparsely so at middle. Upper tooth of protibia distinctly nearer the apical tooth than to the base of the tibia; hind thighs subimpunctate between the submarginal rows of punctures; apex of claw tooth about twice as distant from the base of the claw as from the tip.

Described from a good series of specimens from Mescalera Res., New Mexico, and Bent, New Mexico, all submitted by Mr. K. F. Chamberlain, of the New York State Museum at Albany. The type is a reddish brown example from the first named locality and bears date VII-1927.

This species by its narrow parallel form most closely resembles *parallelus*. By the tabular characters however it runs to vicinity of *belfragei*, differing therefrom by its narrower form, longer mental declivity and more strongly postmedian unguis tooth.

Diplotaxis villosipes new species.

Robust, oblong, subparallel, black, shining, not perceptibly alutaceous.

Mentum horizontal and flatly concave behind the anterior declivity, which is not steep and is margined at summit with a setiferous raised line. Antennal club subequal in length to the funicle; last joint of maxillary palpi broadly ovate pointed and bearing a deep oval impression which occupies rather more than the middle two fourths of the length.

Head two-thirds as wide as the thorax; clypeal margin lightly sinuate at middle, suture moderate, front without postclypeal convexity; punctuation fairly dense, a little less close on the clypeus.

Prothorax one-half wider than long, sides subangularly rounded at middle, thence strongly narrowed to front and rear, evidently sinuate anteriorly, barely visibly so posteriorly; base not quite one-third wider than apex, all the angles sharply defined with nearly rectangular apices; surface rather sparsely not coarsely punctate, punctures separated by one or two times their own diameters, a slight impression at middle near the side and another between this and the front angle.

Elytra two-fifths longer than wide, and one-fifth wider than the thorax, sides parallel and broadly arcuate; costæ undefined; punctures of the first broad interspace confused throughout, in the second only slightly so, and in the third confused toward the base but forming a single line behind the middle.

Pygidium closely subrugosely punctate. Body beneath moderately punctate; metasternum strongly concave at middle; ventral segments each with a transverse more densely punctate median area bearing erect hairs. Upper tooth of protibia equidistant from base and apex; tip of unguis on front and hind feet about two-thirds as far from the apex as from the base of the claw; on the middle feet the claw tooth is very small and rudimentary. All the femora and tibiæ are very densely clothed with fine erect hair on the inner or lower side, that of the hind tibia being longest. The front tarsi are more sparsely hairy within, while the four posterior tarsi entirely lack the fringe of hairs.

Length 13.5 mm.; width 7 mm.

Described from a single male specimen taken at Holtville, Imperial Co., California, IV-3-24, and sent me by Mr. A. C. Davis.

This remarkably fine species is obviously nearly allied to *illustris*, but differs therefrom in many details. *Illustris* is a somewhat smaller species, elytral costæ fairly well defined, intercostal intervals all confusedly punctate, last joint of maxillary palpi much narrower, the front and hind legs only densely hairy within, the unguis more posterior in position and that of the middle claw of normal length; the hind tibiæ have a row of five or six stiff spines along the posterior half of lower edge (not mentioned in original description), there being no trace of these in the present species.

***Diplotaxis futilis* new species.**

Oblong ovate, dark chestnut brown, elytra minutely reticulate, thorax not perceptibly so.

Mentum flat behind, declivous anteriorly with well developed transverse ridge and row of erect setæ. Clypeus broadly emarginate, rather narrowly reflexed, suture distinctly impressed, no postclypeal convexity; front flatly convex, punctures separated by from one-half to fully their own diameters.

Prothorax two-thirds wider than long, sides narrowly margined, rounded at middle, convergent in front, nearly straight and parallel posteriorly; base two-fifths wider than apex; surface rather sparsely punctate, the punctures distant from one to two times their diameters throughout; median lateral fovea evident, a short vague transverse impression before each hind angle.

Elytra one-fourth longer than wide and two and three-fourths times as long as the prothorax, widest behind the middle; costæ feeble, intercostal spaces wide and all with confused punctuation.

Upper tooth of protibia perceptibly nearer the apex than the base of the tibia; unguinal tooth subapical and subequal in length to the upper part of the claw, which in consequence appears to be cleft with the inner part a little thicker.

Length 8 mm.; width 4.5 mm.

Described from a single example from Nogales, Arizona, VIII-31-06, collected and submitted by Mr. Nunenmacher.

An ordinary looking species with no special structural features, which by the tabular characters runs to *marginicollis*. From the latter it differs by its less parallel form, and more especially by its more finely margined thorax which is more narrowed in front.

All of the three following species are of the type of *chiricahuæ*, to which they are similar in form, size, rufotestaceous color, unguinal formation and most other characters except as noted in the following short comparative diagnoses.

Diplotaxis producta new species.

Clypeal margin strongly advanced, moderately reflexed, arcuately emarginate between the prominent limiting angles, the outer sides of which are nearly or quite parallel with the axis of the body. Anterior margin of pronotum not or scarcely visibly more prominent at middle (quite perceptibly so in *chiricahuæ*). Hind angles of prothorax rounded, their vertices not defined as viewed from the side (very obtuse but clearly defined in *chiricahuæ*). All the elytral intercostæ with confused punctuation.

Length 5.3 to 7.3 mm.; width 3 to 3.5 mm.

Described from a series of fifteen specimens, the greater number, including the type, taken at Alpine, Texas, May and June, 1925, by O. C. Poling. Other examples bear labels Cherry Canyon, Fort Davis, Davis Mts., Texas (sent by Mr. A. W. Andrews of Detroit), and Fort Davis and Brewster Co., Texas (sent by Mr. K. F. Chamberlain from the Albany, N. Y., State Museum, these probably also collected by Poling).

Diplotaxis pinalica new species.

Closely allied to *chiricahue* but a little larger and stouter, more widened behind and more punctate than the latter. Clypeus trapezoidal, emarginate between the well defined but obtuse angles which are not or only just perceptibly sinuate on their oblique outer sides. Hind angles of prothorax only barely defined in lateral view; disk of pronotum with distinct median smooth line behind the middle (not present in any of the allied species). Elytral intercostæ all with much confused punctuation.

Length 7.5 to 8 mm.; width 3.8 to 4.1 mm.

Described from four perfectly similar examples collected by Poling in the Pinal Mountains of Arizona, elevation around 5000 ft., April, 1925.

Diplotaxis deserta new species.

Smaller than *chiricahue* or the two preceding species. Clypeus trapezoidal, feebly emarginate, limiting angles obtuse, less sharply defined, not sinuate externally. Front margin of pronotum slightly more prominent medially; hind angles of thorax rounded and not defined in lateral view. First intercostal space of elytra confusedly punctate, second with a single row of punctures, third with punctures confused only toward the base.

Length 5.5 to 6.2 mm.; width 2.9 to 3.15 mm.

California: Palm Springs, VII-23-27 (♂ ♀); Stoddard Well, Mojave Desert, 1 ♀; all submitted by Mr. A. C. Davis. The Palm Springs male is selected as the type.

Diplotaxis incuria new species.

Size small, oblong oval (moderately oval), moderately elongate, a little wider behind; piceous brown, thorax a little paler and more reddish in some examples.

Transverse mental ridge with accompanying setæ well defined. Clypeus trapezoidal, margin feebly emarginate to nearly truncate, angles obtuse but distinct, not or scarcely sinuate externally. Head including clypeus densely rather coarsely punctate; front rather strongly convex but without definite postclypeal ridge. Eyes small and feebly convex, very narrow as viewed from the front, their width about one-ninth their distance apart.

Prothorax fully two-thirds wider than long, base slightly wider than apex, widest a little behind the middle where the sides are strongly sub-angularly rounded, feebly sinuate in front and just perceptibly so before the hind angles which however are rounded and undefined. Surface shining, not perceptibly alutaceous, coarsely punctate, the punctures distant by about their own widths at middle, closer at sides; median lateral fovea evident.

Elytra two and three-fourths times as long as the thorax and about one-third longer than wide; surface finely alutaceous and dully shining; first intercostal space with confused punctures, second and third with punctures usually more or less confused but in one example scarcely at all so.

Body beneath coarsely punctate; upper tooth of protibia at about the middle of the length of the latter; unguinal tooth strongly postmedian, its tip rather more than twice as remote from the base as from the apex of the claw.

Length 5.6 to 6.2 mm.; width 2.75 to 3 mm.

Nevada (Esmeralda Co.) Four examples collected by Mr. Nunenmacher and bearing dates VI-28-07 and VI-16-08; the type bears the first named date.

This little species most nearly resembles *misella* in form, size and its coarse punctuation, but is much darker in color. By the tabular characters it runs to "42" of my table where it is best placed between *punctata* and *chiricahuæ*. From *truncatula* and *punctata* it differs by its smaller size, much less robust form, and more narrowly rounded sides of prothorax, and from both these and *chiricahuæ* by its most distinctive peculiarity the smaller less prominent eyes, which in the two first named species are separated by one-fourth to one-fifth, and in *chiricahuæ* by two-fifths to one-third the ocular width, the variations within specific limits being probably mainly sexual. I am unable to definitely distinguish the sexes in the four samples of the present species but in one of them the eyes are just perceptibly more developed and the elytra are more nearly parallel sided, which probably indicates a male.

PHYLLOPHAGA

Phyllophaga contaminata new species.

Elongate, moderately convex, a little broader behind; blackish brown, shining, upper surface glabrous.

Head coarsely closely punctate, the clypeus more sparsely so, the latter with strongly reflexed margin which is truncate with rounded angles; clypeal suture lightly impressed. Antennæ 9-jointed, club (δ) about one-fourth longer than the stem.

Prothorax two-fifths wider than long; sides rather narrowly rounded and widest at basal two-fifths, thence straight, strongly convergent, ciliate and feebly crenulate in front; less convergent, nearly straight and without cilia or crenulation posteriorly; hind angles obtuse but well defined; surface polished, sparsely, somewhat unevenly and not coarsely punctate, apical margin thickened.

Elytra moderately finely and closely punctate, the punctures distinctly separated laterally, becoming more or less rugulose confluent toward the suture; sutural striæ deep, the sutural costa conspicuous, discal costæ wanting.

Pygidium alutaceous, very sparsely punctured. Metasternum with rather long pale hairs; abdomen more sparsely punctate with shorter hairs. Protibiæ bidentate; four anterior femora rather slender, hind femur nearly twice as broad; claws with a small acute tooth close to the base.

Length 10.5 mm.; width 4.8 mm.

The unique male type bears label "San Bartolome, Dist. Sur, Baja Calif., July 15, 1919; G. F. Ferris."

As indicated the type is certainly a male, but there are no obvious ventral sexual characters. The spurs of the hind tibiæ are rather slender, slightly unequal but otherwise similar, and both are free.

This species clearly possesses the characteristics of Horn's Group XVIII, though it was first placed in my cabinet as an aberrant *Listrochelus*. It is at once separable from the few species of the group by its nearly black color.

***Phyllophaga extranea* new species.**

Oblong oval, wider behind; yellowish testaceous, clypeus rufous with darker margins, prothorax with two small subapical diffuse brownish spots; upper surface glabrous, moderately shining.

Head sparsely punctate, clypeus remotely so, the latter broadly arcuately emarginate between the obtuse but well defined angles; clypeal suture very fine, not impressed. Antennæ (♂) 9-jointed, club almost one-half longer than the stem.

Prothorax three-fifths wider than long, widest just behind the middle, apex narrower than base, sides anteriorly nearly straight and strongly convergent, less convergent behind and rounding into the base; margin sparsely fimbriate with long erect hairs except near the base, but not perceptibly crenulate as viewed from above; anterior margin narrowly thickened; surface shining with fine sparse somewhat unevenly dispersed punctures.

Elytra rather finely and closely punctate; sutural costa well defined, discal costæ lacking; margin ciliate.

Pygidium evenly not strongly convex, with fine remote punctures. Metasternum somewhat thinly clothed with moderately long hair; abdomen with few punctures, these bearing erect hairs and for the most part arranged in a single transverse line on each segment. Protibiæ slender, bidentate, and with a very feeble obtuse angulation representing an upper tooth; hind tighs much stouter than the others; claws with a small sharp basal tooth.

Length 10 mm.; width 6.2 mm.

Described from a single male bearing label "San Pedro, Dist. Sur, Baja California, July 5, 1919; G. E. Ferris."

The ventral segments are perceptibly flattened but show no other obvious sexual character. The posterior tibial spurs are

nearly as in the preceding species. This species also belongs in Horn's Group XVIII, and is similar in color to *tusa* and *maculicollis*, but is at once distinguishable by its angulate clypeus from all other species of the group.

LISTROCHELUS

Listrochelus plenus new species.

Oblong, subcylindrical (σ) or a little widened behind (φ); reddish brown, thorax castaneous; elytra pruinose, thorax not at all so; surface apparently glabrous, a few extremely fine and short semierect hairs detectable on the elytra when viewed tangentially.

Front and clypeus moderately coarsely punctate, the latter smooth or with but few punctures postero-medially; clypeal suture not impressed, margin moderately reflexed, feebly emarginate at middle; surface strongly shining in the male, duller in the female.

Prothorax about three-fifths wider than long, base wider than apex, sides strongly subangularly rounded at middle, margin distinctly crenulate anteriorly, feebly so posteriorly; rather loosely and not coarsely punctate, median line imperfectly or incompletely smooth with faint trace of impressed line anteriorly, surface polished.

Elytra rather finely evenly not closely punctate, sutural costa distinct though feebly elevated, first discal costa traceable, the others obsolete.

Body beneath finely sparsely punctate, sterna with rather dense long pilosity.

Length (to elytral apex) 12.5 to 13.25 mm.; width 5.8 to 6.75 mm.

MALE. Antennal club longer than the funicle; ventral segments distinctly flattened at middle, sparsely finely punctate and with moderately long bristling hairs which become more abundant on the median parts of the 5th and 6th segments, where also the punctures become subsperate; 6th segment but little shorter than the 5th. Pygidium strongly convex. Claws almost precisely as in *mucoreus*, the outer claw of the anterior tarsus pectinate along a double margin with a more prominent tooth at apical third; the inner claw and all claws of middle and hind tarsi pectinate along double margin without tooth. Posterior tibial spurs slender, unequal, the longer spur only slightly stouter and less pointed at tip.

FEMALE. Antennal club subequal in length to the funicle; ventral segments convex, very sparsely punctate, almost without hairs except a few recumbent ones toward the sides; 5th segment much longer than in the male and about twice as long as the 6th. Pygidium smaller than in the male, moderately convex, a little flattened medially toward the apex. Anterior claws alike and pectinate along a single margin from base to a moderate acute tooth beyond the middle; middle claws similar to the anterior but very small tooth just beyond the middle and within the pectination. Posterior tibial spurs subequal, a little shorter and less slender than in the male but not at all spatulate.

Southern Arizona (Ajo, one example; Baboquivari Mts., fifteen examples): all collected by O. C. Poling. The type is a male from the last named locality and bears date VII, 1-15, 1923.

This species is closely allied to *mucoreus* but the latter may at once be distinguished by the presence of long hairs at base of thorax and elytra, the lack of the median smooth area of the clypeus, the less flattened ventral surface with absence of erect hairs in the male, and by the presence of a distinct gibbosity at middle of 5th ventral in the female. A comparison of the descriptions will reveal further differences. The unique male type of *obtusus* Lec. differs from the present species by the evenly rounded clypeus, long hairs at base of thorax and elytra, barely visibly flattened venter with complete absence of erect hairs; there is no trace of pruinosity at any part.

***Listrochelus juvenilis* new species.**

Oblong, cylindrical, entirely flavotestaceous; surface without hairs and not in the least pruinose, moderately shining, not perceptibly alutaceous.

Head slightly more than three-fifths as wide as the thorax, clypeus moderately reflexed, truncate with rounded angles, clypeal suture lightly impressed; punctuation coarse, rather close but not crowded.

Prothorax one-half wider than long, sides rounded at middle, thence convergent and nearly straight both to front and rear; base distinctly wider than apex, base angles obtuse with rounded vertices, front angles better defined; surface shining, coarsely loosely punctate, the punctures less numerous medio-basally; disk with two subapical foveiform impressions, two others a little more remote behind the middle, and a smaller or more feeble one near the sides; median line vaguely impressed posteriorly; side margins finely crenulate.

Elytra but little wider than the thorax, sutural costa well defined and with a few fine punctures, discal costæ fine but traceable, punctuation similar to that of the thorax.

Beneath sparsely punctured, each puncture of the metasternum and abdomen bearing a short stiff pointed seta, those of the abdomen being arranged in two fairly regular rows on each segment.

Length 7.25 mm.; width 3 mm.

MALE. Club of antennæ slightly longer than the funicle. Pygidium uniformly flatly convex with a few shallow scattered punctures. Abdomen convex without special sexual modification, the sixth segment much shorter than the fifth. Claws alike on all the feet, a small acute tooth at basal third or two-fifths, between the tooth and the base minutely crenulate.

FEMALE. Unknown.

Baboquivari Mts., Arizona; collected by O. C. Poling.

This little species is the smallest of the genus thus far known from our fauna. It is nearest in size and general facies to *timidus* and is equally destitute of the transverse vertical ridge which is characteristic of the more typical species of the genus. In *timidus* the clypeus is distinctly emarginate, the head densely punctate, thorax densely punctate along the anterior margin and without discal foveae, ventral segments more numerous and irregularly punctate, claws of male finely serrato-crenulate throughout the greater part of their length.

THYCE

Thyce bidentata new species.

Oblong, subcylindrical, moderately convex; pale brown; vestiture above consisting of short slender lanceolate subsquamiform hairs, pale yellowish in color, with moderately long suberect hair of slightly darker tint on the head and antero-median area of the prothorax. The vestiture does not conceal the surface except nearly so on the head, a sublateral area of the pronotum and on the scutellum.

Clypeal margin rather widely reflexed, sinuato-truncate, the angles well defined, sides subparallel and broadly subangulate curvate. Antennal club a little shorter than the stem; last joint of maxillary palpi twice as long as wide, about two-fifths as long as the antennal club, the excavation moderately deep and occupying the basal two-thirds or more.

Prothorax of usual form, lateral and posterior angles obtuse, rounded; sides straight and subparallel between the obtuse angles; lateral margins more than usually flattened and reflexed; surface smooth and polished between the punctures, which are well separated medially but a little closer at sides.

Elytra three-tenths longer than wide and not quite one-half wider than the prothorax; surface finely subrugulose and indistinctly finely punctate.

Body beneath and vestiture as usual in the genus. Protibiae bidentate without trace of the usual third upper tooth. Middle tarsus subequal in length to the tibia, hind tarsus just perceptibly shorter than the tibia; tarsal claws on all the feet unequally toothed, the disparity slight on the hind feet.

Length 19.5 mm.; width 9.6 mm.

Described from a single male from Kern Co., California, sent me many years ago as *carpenteri* by Mr. L. E. Ricksecker.

This species differs notably from all previously described in two particulars, *viz.*, the bidentate anterior tibiae of the male, and the wider subexplanate side margins of the prothorax. On

the basis of the first named peculiarity it may be placed rather empirically between those having the protibia tridentate and the few at the end of the genus with unidentate tibiae.

In view of the fact that only about half of the twenty-three names assigned by Casey in his last paper on this genus are capable of definite recognition by the student, certain observations seem pertinent. The well known tendency of this author to exaggerate the importance of small differences is nowhere better illustrated than in the series of so called species and subspecies from *vestita* to *pulverea* inclusive in his table. To my way of thinking the nine names here included cover a mixture of more or less trifling individual and local variants which are in no sense valid species. Moreover it is doubtful if anything would be gained by a retention of these names even in a varietal sense, since a study of fifty specimens in my own cabinet all lying within the above limits, prove the characters used to be so far gradational and intercurrent as to almost nullify any attempt at definite identification. As further contributory evidence against the probability of validity it may be added that eight of the nine forms in question bear the same locality label (Los Angeles Co.) and five of the nine were described from uniques.

The first to be described of the above Caseyan species were *pulverea* and *fossiger* (Coleop. Notices I, 1889, p. 170). In the table there given *pulverea* is said to differ from *palpalis* Horn by the denser pubescence and the palpal groove widening toward the base; while *fossiger* is distinct from *palpalis* by the last joint of the maxillary palpi being only very slightly shorter than the antennal club; whereas in *palpalis* the last joint of palpus is said (following Horn) to be three fourths as long as the antennal club, and the groove (judging from Horn's figure) evenly elliptical. As a matter of fact, as I know from an examination of the unique type of *palpalis* in the Horn collection, the terminal joint of the maxillary palpus is fully four-fifths as long as the antennal club and the palpal groove is not evenly elliptical but wider toward the base. This is merely one of a multiplicity of instances of error resulting from a too literal dependence on an earlier description or figure. In this particular case however

the author had no other course since the type was not available for study. The point to be stressed here however is that all of the characters used are variable, between limits of course, within the species, and unless these limits are expressed, characters or measurements drawn from a single example may easily mislead. This point is well illustrated in a series of *blaisdelli* from the type locality (Coronado, Calif.) in my collection, in which the length of the last palpal joint varies from three-fourths as long to almost as long as the antennal club, and the form of the palpal groove is quite inconstant. It therefore became evident to me after studying the type of *palpalis* that *blaisdelli*, *fossiger* and *pulverea* could not be definitely separated therefrom, and a later examination of the Casey types only confirms my impression and impels the inclusion of other more recently described forms as above indicated.

As for the remaining species of the genus, *crenicollis* was vainly described from the female alone and is therefore practically indeterminate because of the difficulty of properly associating the sexes in this genus unless actually taken together. *Squamicollis*, *carpenteri*, *riversi*, *pistoria*, *rotundicauda*, *harfordi*, *squamosa* and *feldi* are unquestionably distinct species and not difficult to identify. *Longipalpis* is very close to *harfordi* but the small differences may be significant if its more northern locality is correct. Of *simplicipes* and *angusticollis* it is difficult to make an estimate without more material; both were described from uniques and *simplicipes* unfortunately lacks the maxillary palpi.

COTALPA

Cotalpa (Pocalta) leonina new species.

Of the usual robust abbreviated form; clypeus black; occiput, prothorax, scutellum and pygidium deep blue, elytra reddish brown; body beneath black, legs black with bluish lustre, the front and middle tibiae medially rufescent, the hind tibiae more completely so. Pubescence ashy white, erect, very fine, long and dense on the head and thorax, still denser at the sides of the body and beneath, sparser on the elytra where it is confined to a basal triangular area and a single row of hairs extending backward on either side of the suture to the apical declivity.

Clypeus semi-elliptical, very densely subrugosely punctate as usual.

Prothorax not quite three-fifths wider than long and two-thirds as wide as the elytra; sides strongly rounded at about the apical third, thence

rapidly converging and just perceptibly arcuate to the front angles, and straight and feebly convergent to the obtuse but well defined hind angles; punctuation fine and dense but not rugose, the punctures narrowly separated to quite in contact; basal marginal line fine, interrupted at middle.

Elytra very nearly as wide as long, sides parallel and broadly arcuate, apex obtusely rounded; surface minutely alutaceous and a little dull; punctuation fine and rather sparse, geminate lines finely impressed but distinct. Pygidium finely sparsely punctate and shining, the punctures a little more numerous toward the sides and base but with scarcely a trace of rugosity.

Length 14.5 mm.; width 8.8 mm.

Described from a single male specimen collected in Antelope Valley in the northern part of Los Angeles Co., California, and has stood in my collection waiting for a name nearly if not quite forty years.

The type is of the same general appearance as *ursina* Horn, but it differs notably from the latter in the form of the prothorax as well as in the very much finer and denser punctuation and longer denser pilosity of this part of the body. In *ursina* the prothorax is more transverse, more shining, much more coarsely and less densely punctured, with the sides more evenly and distinctly arcuate throughout, the point of maximum width at about the middle of the length.

Of the seven species of the *ursina* group of *Cotalpa* described as new by Casey (Memoirs: 1915, p. 92 et seq.) it is hardly possible that more than one or two can be valid. I can see nothing whatever in the diagnoses of *lævicauda*, *brevis* or *rotunda* to warrant a belief in their distinctness from the common and well known *ursina*, within the range of which they all occur. *Rubripennis* and *nigripennis* are certainly color phases of one and the same species, which however because of the average larger size and the bright green thorax with its denser punctuation may well be distinct from *ursina*. The status of *seriata* and *pubicollis* is less obvious, but I believe the latter will prove to be only a varietal form of *granicollis*. It may be positively asserted that the color of the tibiæ as used by Casey to delimit *ursina* has no specific weight whatever.